

recent immigrant from Indo-Malaya. To date it is the only non-Australasian element in this faunula. (The family Mutelidae occurs in Africa, southern South America and Australasia, while the Unionidae is found in Europe, Asia, North America, northern South America and Africa. The Indo-Malayan species are all Unionidae, with the exception of a few aberrant forms of the family Mycetopodinae.)

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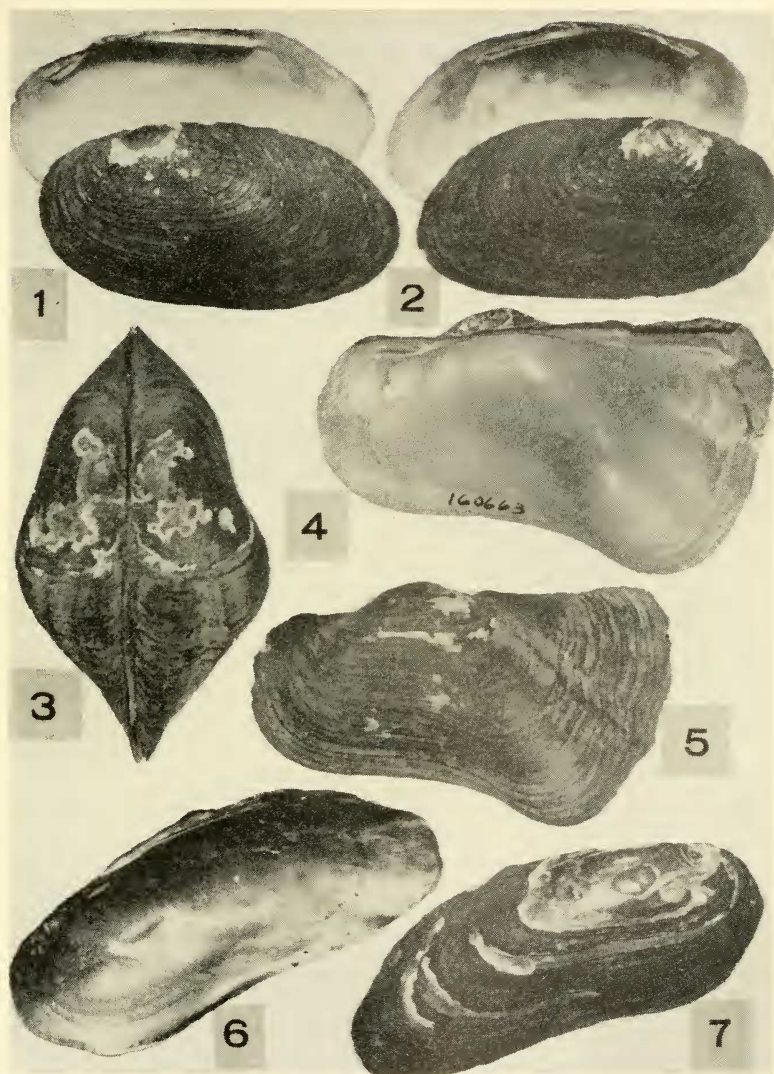
DISTRIBUTION OF LIVING GLYCYMERIDS WITH A NEW SPECIES FROM BERMUDA

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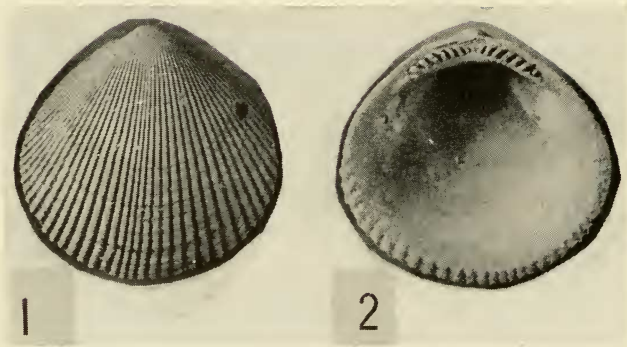
U. S. National Museum ¹

Living members of the pelecypod family Glycymeridae can be divided into two large groups of species, and in a general way these two groups can be distinguished on the basis of the ornamentation on the exterior of the shell or, more specifically, the kind of ribs each has. The more ancient, more widely distributed geographically, and more numerous in species is the group typified by *Glycymeris*, *sensu stricto*. This group has shown relatively little change in ornamentation since the Glycymeridae first appeared in the early Cretaceous. Basically, the *Glycymeris* group has wide and relatively flat radial ribs with superimposed radial striae. Furthermore, living specimens usually have a luxuriant development of hair-like periostracum. Other genera and subgenera that can be placed in the *Glycymeris* group are *Glycymerula* Finlay and Marwick, 1937; *Veletuceta* Iredale, 1931; *Glycymerella* Woodring, 1925; and *Pseudaxinea* Monterosato, 1892. *Pseudaxinea* does not have radial striae on the large ribs, but the remaining morphologic characters

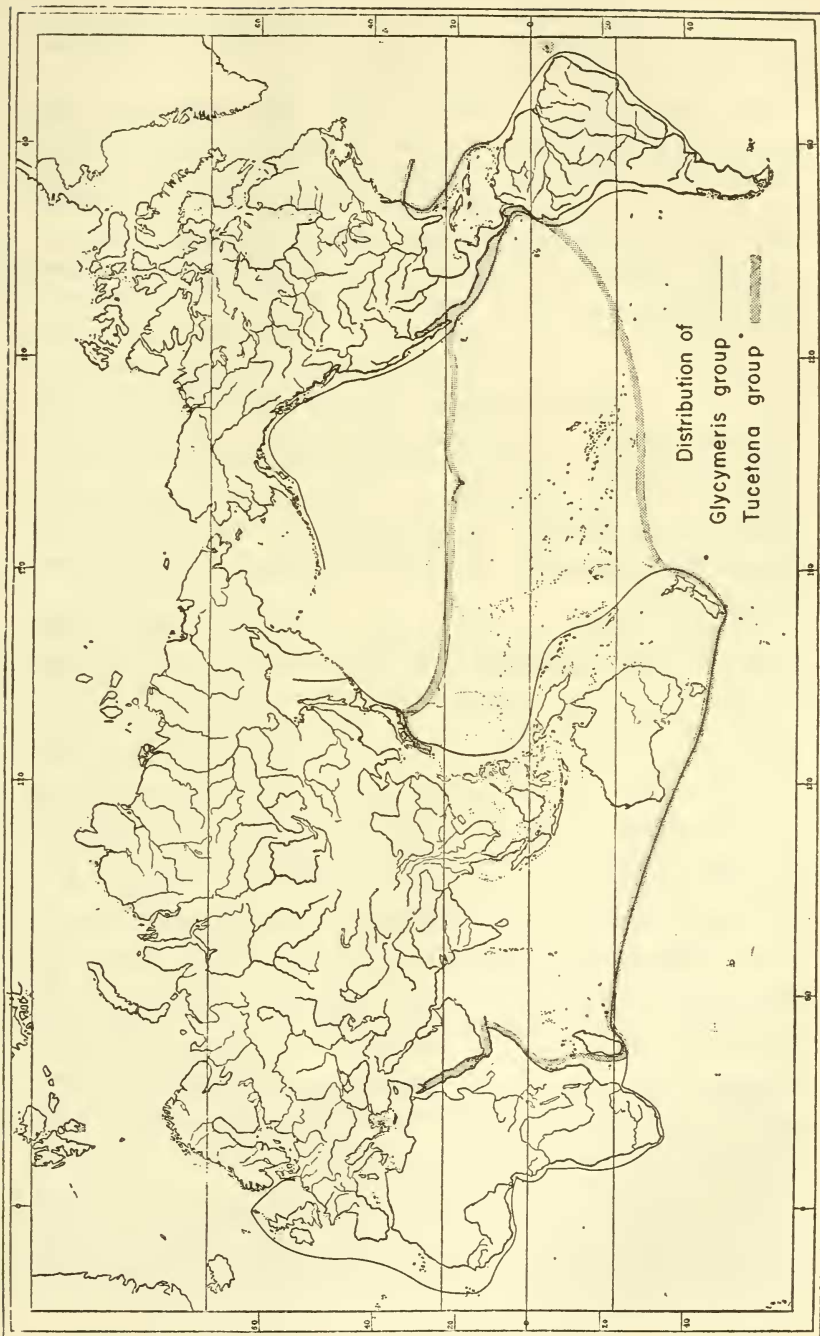
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1, *Leiovirgus guppyi aipianus* ssp. nov., type, Q.M. Number Mo. 2798. ($\times 1.2$). 2, *Leiovirgus guppyi aipianus* ssp. nov., A.M. Number C. 62203. ($\times 1.2$). 3-5, *Haasodonta fannya* (Johnson), type, M.C.Z. Number 160663. ($\times 8$). 6-7, *Leiovirgus misoolensis* (Schepman), Fly River, Papua; A.M. Number C.62204. ($\times 8$).



Both figures $\times 3$; holotype of *Tucetona subtilis* Nicol, n. sp.; U. S. N. M. 610128. 1. Exterior view. 2. Interior view.



are like *Glycymeris*, *sensu stricto*. This large group has species in tropical and temperate waters and a few in cold waters, but it is never found in true arctic conditions.

The second group is typified by the genus *Tucetona*. The radial ribs are raised and are either simple or divided. Superimposed radial striae are never present, and there is little or no periostracum on living specimens. Besides *Tucetona* Iredale, 1931, other genera and subgenera belonging to this group are *Axinactis* Mörch, 1861; *Grandaxinaea* Iredale, 1931; and very likely *Melaxinaea* Iredale, 1930; and *Tucetilla* Iredale, 1939. This group does not appear in the geologic record before the Eocene, and it is not abundantly represented by species before late Oligocene. Except around Australia and New Zealand, the *Tucetona* group is confined to warm waters; and where this group invades cooler waters, the prominent raised ribs tend to become flatter, as exemplified by *Grandaxinaea*, New Zealand, and *Tucetona flabellata* (Tennison-Woods), Victoria and Tasmania, the type species, by original designation, of *Tucetona* Iredale, 1931.

The map included with this paper brings out further details concerning the distribution of the Glycymeridae. The *Tucetona* group is found in the Indo-Pacific area, including all of Australia, New Zealand, and southern Japan; it is also found in the Panamic province, in the Caribbean province, and along the Atlantic coast of North America as far north as Cape Hatteras and as far east as Bermuda. I have recorded one occurrence off the coast of Brazil but have not recorded a very questionable report of the *Tucetona* group from southwestern Africa. It is interesting to note that the *Tucetona* group probably does not occur in the eastern Atlantic Ocean and the Mediterranean Sea and is poorly represented, as to number of species, in the Caribbean region. However, the *Tucetona* group may be the only one represented in the islands of the central and eastern Pacific Ocean; for example, although several species of glycymerids have been reported from Hawaii, none belongs to the *Glycymeris* group. In general, glycymerids of both groups are poorly represented around coral atolls.

The *Glycymeris* group is more widely distributed, although the exact limits of distribution in the northern Pacific Ocean and along the coast of northern Europe could not be ascertained by

the published records, some of which are obsolete and inaccurate, particularly those on the western European region. The exact southern limits along the coasts of South America may also be somewhat inaccurate, but in all cases the general pattern of distribution is clear. Included in the references are my main sources of information on geographic distribution outside of the collection at the U. S. National Museum.

At least two species belonging to the *Tucetona* group occur in the western Atlantic region. One of them is the widely distributed and variable species *Tucetona pectinata* (Gmelin); the other is a new species from Bermuda, described as follows.

TUCETONA SUBTILIS Nicol, n. sp. Pl. 3, figs. 1-2.

Type specimens—Holotype U. S. N. M. 610128. Paratypes (18) U. S. N. M. 610129. Paratypes (8) U. S. N. M. 610130.

Description—Shell porcellaneous; largest specimen height 11.5 mm., length 12.0 mm.; outline circular in small and medium-sized specimens, posterior end somewhat produced in large specimens; length greater than height in large specimens, more nearly equal in small and medium-sized specimens; ratio of convexity to height in 27 specimens ranges from 0.51 to 0.66, averaging 0.60; number of ribs ranges from 44 to 58, averaging 50; ribs raised, nearly equal in size, gently rounded on top, crossed by fine concentric striae which tend to give an imbricated appearance, ribs generally wider than interspaces at ventral border, no radial striae on ribs; crenulations on interior ventral border small, numerous, ranging from 24 to 39, averaging 32, rectangular, generally narrower than interspaces; umbones not prominent, beaks directed slightly toward the posterior side; ligament amphidetic, ligamental chevrons ranging in number from 1 to 4, ligamental area small; hinge teeth symmetrically arranged, ranging in number from 6 to 21, averaging 14, generally fewer teeth in smaller specimens.

The most closely related species morphologically, geographically, and chronologically to *Tucetona subtilis* is *Tucetona pectinata* (Gmelin). The most striking difference between the two species on casual observation is the ribbing. *Tucetona subtilis* has more numerous and finer ribs than *Tucetona pectinata*. In number, the average for *Tucetona subtilis* is 50 and for *Tucetona pectinata* 32. However, there are some specimens